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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,116	03/31/2004	Andreas Kirchner	OST-041134	6567

22876 7590 10/05/2005

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EXAMINER	
GUTIERREZ, KEVIN C	
ART UNIT	**PAPER NUMBER**
2851	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/815,116	KIRCHNER ET AL.	
	Examiner	Art Unit	
	Kevin Gutierrez	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *19-32 and 35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *August 16, 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I (claims 1-18 and 34) in the reply filed on September 8,2005 is acknowledged.

2. Claims 19-32 and 35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 8, 2005.

Claim Objections

3. With regards to claim 34, the following is an excerpt from MPEP 608.01(n): If claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product might be made in other ways. In the instant case, the product could be made by a maskless system that provides structures to be imaged instead of provided the reticle as claimed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 16 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Der Werf et al (US 2003/0003383).

Regarding claim 1, Van Der Werf et al disclose

• "A method for the correction of a substantially linear distortion with twofold symmetry in an extra-axial field region of an image plane of a projection lens that is non-telecentric on the object side and that is part of a microlithographic projection exposure apparatus ([0016], lines 1-4), with which

• a pattern contained in a reticle (MA; mask) can be imaged on a substrate (W; wafer) of a light-sensitive layer while the reticle (MA; mask) is traversed relative the projection lens (PL) along a scan direction at a first relative velocity ([0017], lines 5-13), comprising

• the step of tilting the reticle (MA; mask) for the correction of the distortion about a tilt axis that is disposed at least approximately perpendicular to an optical axis of the projection lens (PL) and to the scan direction ([0017], lines 9-13)."

Regarding claim 2, Van Der Werf et al disclose "wherein a wafer is traversed along the scan direction relative to the projection lens at a second relative velocity ([0033]), the ratio of the first traversing velocity to the second traversing velocity being predetermined by the linear magnification of the projection lens ([0056], lines 12-14)."

Regarding claims 3 and 4, Van Der Werf et al disclose wherein the tilt axis extends through "a region" and "the middle of the region" of the reticle that is exposed to projection light ([0058], lines 7-10)."

Regarding claim 16, Van Der Werf et al disclose "wherein additionally the linear magnification of the projection lens is changed ([0044], lines 6-9)."

Regarding claim 33, Van Der Werf et al disclose

- "a) providing a substrate onto which a layer of a light-sensitive material is applied at least partially ([0010], lines 3-4);
- b) providing a reticle that contains structures to be imaged ([0004], line 9);
- c) providing a projection exposure apparatus with a projection lens ([0011], lines 5-6);
- d) correction of a distortion of the projection lens in accordance with the method as specified in claim 1 ([0066], lines 1-5);
- e) projecting at least a part of the reticle onto a region on the layer with the aid of the projection exposure apparatus ([0004], lines 4-6)."

Regarding claim 34, Van Der Werf et al disclose "a microstructured component that is produced by a method according to claim 33 ([0009], lines 1-2)."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Der Werf et al in view of Fujisawa et al (US 2003/0090640).

Regarding claims 5-7, Van Der Werf et al disclose where the reticle can be tilted about an axis and where the position of the wafer is displaceable. Van Der Werf et al does not disclose (claim 5) "wherein additionally the wafer is tilted about a further tilt axis that extends parallel to the tilt axis about which the reticle is tilted; (claim 6) "wherein the reticle and the wafer are tilted about tilt angles, the ratio of which is, in terms of magnitude, substantially equal to the linear magnification of the projection lens;" and (claim 7) "wherein the tilt axes about which the reticle and the wafer are tilted have spacings from the optical axis, the ratio of which is, in terms of magnitude, substantially equal to the linear magnification of the projection lens."

However, having the axes and tilt of the reticle and wafer in a way as aforementioned above is known to the art as it is evident by the teaching of Fujisawa et al ([0064], lines 13-16, where the change of tilt angle of the wafer is performed by the driving mechanism 111). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the wafer stage of Van Der Werf et al by having it being tilted by the driving mechanism as taught by Fujisawa for at least the purpose of performing an aberration correction.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Der Werf et al in view of Suzuki (5,796,467).

Van Der Werf et al discloses a moveable substrate, but does not disclose "wherein the substrate is displaced in the image plane for the correction of a field-constant portion of the distortion."

However, having a substrate displaced in the image plane for the correction of a field-constant portion of the distortion is known to the art as it is evident by the teaching of Suzuki (col. 1, lines 47-49 and lines 58-61). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the substrate table of Van Der Werf et al by having the substrate displaced in the image plane for at least the purpose to obtain a less distorted image.

9. Claims 9, 10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Der Werf et al in view of Fujisawa et al.

Regarding claims 9, 10 and 13, Der Werf et al disclose all of the claimed limitations except "wherein additionally at least one optical element of the projection lens is changed in its spatial position."

However, having at least one optical element of the projection lens is changed in its spatial position parallel to the optical axis and perpendicular to the scanning direction is known to the art as it is evident by the teaching of Fujisawa et al ([0066], lines 2-4, a lens control unit control a driving element to drive the lens elements in a direction in the optical axis). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the projection lens of

Der Werf et al by including a driving element to control change the spatial position of the projection lens for at least the purpose of performing an aberration correction.

Regarding claims 14 and 15, Van Der Werf et al disclose all of the claimed limitations except (claim 14) "wherein the at least one optical element is tilted about a tilt axis that is disposed at least approximately perpendicular to the optical axis of the projection lens and to the scan direction" and (claim 15) "wherein the at least one optical element is tilted about a tilt axis that is disposed at least approximately perpendicular to the optical axis of the projection lens and parallel to the scan direction."

However, wherein the at least one optical element is tilted about a tilt axis that is disposed at least approximately perpendicular to the optical axis of the projection lens and at least perpendicular to the scan direction or parallel to the scan direction is known to the art as it is evident by the teaching of Fujisawa et al ([0066], lines 63-66). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the projection lens of Van Der Werf et al by including a driving element to perform a tilt in a manner described above for at least the purpose to as aforementioned above for at least the purpose of adjusting an aberration.

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Der Werf et al in view of Fujisawa et al, as applied to claim 9, and in further view of Suzuki.

Van Der Werf et al, as modified, disclose all of the claimed limitations except "wherein the at least one optical element is displaced translationally in a plane perpendicular to the optical axis."

However, having at least one optical element displaced in a plane perpendicular to the optical axis and in the scan direction is known to the art as it is evident by the teaching of Suzuki (col. 7, lines 63-66). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the projection lens of Van Der Werf et al by including means to drive an optical element of the projection lens for at least the purpose to incline the imaging plane.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following disclose methods to compensate for image distortions of the exposure apparatus: Baselmans et al (US 200/0191165) and Higashiki (6,262,792).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-

5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Gutierrez
Examiner
Art Unit 2851

October 3, 2005

JUDY NGUYEN
SUPERVISORY PATENT EXAMINER